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Tree Pest Leaflets

THE EUROPEAN PINE SHOOT MOTH

Rhyacionia buoliana Schiff.

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Courtesy Conn. Agri. Exp. Sta.

Young red pine with tips of branches injured by the larvae of the European pine shoot moth.

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The State Foresters, State Departments of Agriculture, State Agricultural Experiment Stations, Forest Schools and Forest and Park Associations of New England and New York, and the Northeastern Forest Experiment Station, the Office of Forest Pathology, Bureau of Plant Industry and the Division of Forest Insect Investigations, Bureau of Entomology and Plant Quarantine of the United States Department of Agriculture.

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THE EUROPEAN PINE SHOOT MOTH

Rhyacionia buoliana Schiff.

Distribution:—In North America this insect occurs in the United States from Virginia north and from Illinois and Michigan east, and in southern Ontario in Canada. It is native to Europe where it is found over most of the continent where pine trees grow.

Host trees:—Although the insect has been found on a large number of species of pine, its principal host plants in its present range in North America are red pine (*Pinus resinosa*), mugho pine (*P. mugo*) and Scotch pine (*P. sylvestris*). Austrian pine (*P. nigra*) is sometimes heavily infested, but not so much so as the above three species. If the insect becomes more widely distributed on this continent it may become a serious pest of southern and western pines.

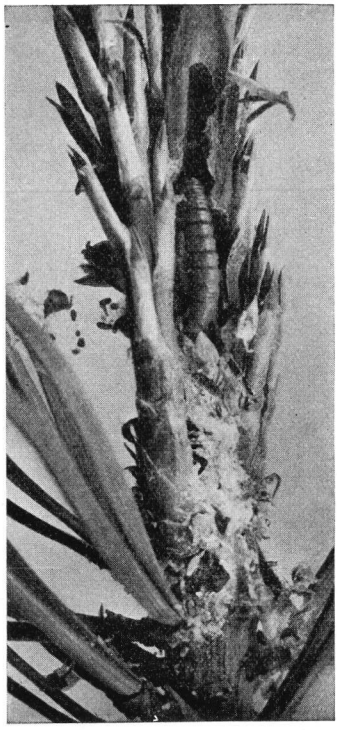
Injury:—There are three periods during its larval life when this insect injures the host, and in each of these cases the injury is distinct. In the first part of the summer some of the needles at the tips of the twigs are killed. These soon turn brown and remain on the tree until late fall. When the larval population is dense, the needles on the terminals of red pine may be killed for a distance of 6 inches back from the tip. In the late summer and fall the buds are bored, each larva usually boring one bud at this time. The injury is indicated by the mass of pitch on the bud. In the spring the larvae bore into the growing shoots, usually killing them. The infested shoot curls over slightly, and, if it survives the injury, it later resumes perpendicular growth. In this latter case the crook in the stem is practically a permanent distortion, the so-called "bayonet tip". The death of the buds and shoots retards the growth of the trees and stimulates the development of latent buds, resulting in bushy tips. Severely infested trees become bushy, have distorted stems and may die.

This insect is primarily a pest of young trees and does not severely injure those forest stands over about 20 feet in height. On young trees the greater amount of injury is in the tops.

Description:—The adult moth is reddish brown in color with silvery stripes across the forewings. The wing spread is about 20 millimeters. The egg is yellowish in color when first laid but later turns reddish brown. It is disc-shaped and slightly less than one

millimeter in diameter. The larva is light brown in color and about two millimeters long when first hatched. The older larvae are darker and reach a length of about 15 millimeters when fully grown. The thoracic shield, just behind the head, is dark brown in color. The pupa is brown in color and about 10 millimeters long.

Life cycle:—The adults fly during June and the first part of July in New England. The eggs are laid near the tips of the twigs, either



Courtesy Conn. Agri. Exp. Sta.
Larva of the European pine shoot moth in new growth of red pine. Enlarged twice.

on the twig itself or on a needle sheath, and usually on the upper part of the tree. The period of incubation is about 10 days. The young larvae bore into the bases of the needles through the sheath, killing the needles affected. During the latter part of the summer they leave the needles and bore into the buds. Pitch flows from the wound in the bud and hardens into a whitish mass which often covers the larval burrow. Winter is spent in the bud or under the mass of pitch on the bud. At this time the larva is about four millimeters long.

When the growth of the trees begins in the spring the larvae bore into the developing shoots, causing the latter to curl slightly and die. The larva becomes fully grown in May and pupates in the burrow. The pupal period is about 18 days in length.

Control:—In young forest stands the insect can be kept under control by cutting off and destroying the infested tips of the twigs in May. Many of the larvae die during the winter and hence cutting the infested tips before spring would mean the removal of many in which no larvae would survive, an unnecessary procedure. Moreover, in May the injury is more conspicuous, thus the larvae more easily discovered than at any other time of the year. Control measures should be carried out before the infestation becomes heavy. Red pine stands which are not infested until the trees are over 10 feet in height do not, as a rule, become badly injured even when the insect becomes established in them later.

On ornamental trees the insect is readily controlled by spraying with a mixture of three pounds of lead arsenate and one quart of fish oil in 100 gallons of water. Two applications should be made, one about the 12th of June and one about 10 days later. The trees should be well sprayed so that the insecticide will run down the needles of the new growth and accumulate at the junctions of the needles and the twig.

Cold winter weather causes considerable mortality of the larvae, which do not survive temperatures below about —18° F. The history of the shoot moth in United States up to the present time indicates that in northern New England it will not be a serious pest because of low winter temperatures.

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